SEQUENCE LISTING

<100>   Chugai Seiyaku Kabushiki Kaisha

<120>   Natural Humanized Antibody

<130>   F885/PCT

<150>   JP 9-271726
<151>   1997-10-03

<160>   129

<210>   1
<211>   394
<212>   DNA
<213>   Mouse

<223>   cDNA coding for L chain V region of anti-HM1.24
         antibody

<400>   1

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atg ggc ttc aag atg gag tca cat ttt ctg gtc ttt gta ttc gtg ttt            48
Met Gly Phe Lys Met Glu Ser His Phe Leu Val Phe Val Phe Val Phe
            -20                 -15                 -10

ctc tgg ttg tct ggt gtt gac gga gac att gtg atg acc cag tct cac            96
Leu Trp Leu Ser Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser His
            -5                  -1   1                   5

aaa ttc atg tcc aca tca gta gga gac agg gtc agc atc acc tgc aag           144
Lys Phe Met Ser Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys
     10                  15                  20

gcc agt cag gat gtg aat act gct gta gcc tgg tat caa caa aaa cca           192
Ala Ser Gln Asp Val Asn Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro
 25                  30                  35                  40

gga caa tcg cct aaa cta ctg att tac tcg gca tcc aac cgg tac act           240
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Ser Ala Ser Asn Arg Tyr Thr
             45                  50                  55
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gga gtc cct gat cgc atc act ggc agt gga tct ggg acg gat ttc act       288
Gly Val Pro Asp Arg Ile Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr
            60                  65                  70

ttc acc atc agc agt gtg cag gcg gaa gac ctg gca ctt tat tac tgt       336
Phe Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Leu Tyr Tyr Cys
            75                  80                  85

cag caa cat tat agt act cca ttc acg ttc ggc tcg ggg aca aag ttg       384
Gln Gln His Tyr Ser Thr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu
        90                  95                  100

gaa ata aaa c                                                         394
Glu Ile Lys
105


<210>    2
<211>    131
<212>    PRT
<213>    Mouse

<223>    Amino acid sequence of L chain V region of mouse
         anti-HM1.24 antibody

<400>    2
Met Gly Phe Lys Met Glu Ser His Phe Leu Val Phe Val Phe Val Phe
            -20                 -15                 -10
Leu Trp Leu Ser Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser His
             -5                 -1   1                  5
Lys Phe Met Ser Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys
        10                  15                  20
Ala Ser Gln Asp Val Asn Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro
     25                  30                  35                  40
Gly Gln Ser Pro Lys Leu Leu Ile Tyr Ser Ala Ser Asn Arg Tyr Thr
            45                  50                  55
Gly Val Pro Asp Arg Ile Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr
            60                  65                  70
Phe Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Leu Tyr Tyr Cys
            75                  80                  85
Gln Gln His Tyr Ser Thr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu
        90                  95                  100
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Glu Ile Lys
105

<210>   3
<211>   418
<212>   DNA
<213>   Mouse

<223>   cDNA coding for H chain V region of mouse anti-HM1.24
         antibody

<400>   3
atg gaa tgt aac tgg ata ctt cct ttt att ctg tca gta act tca ggt   48
Met Glu Cys Asn Trp Ile Leu Pro Phe Ile Leu Ser Val Thr Ser Gly
                -15   -10   -5
gcc tac tca cag gtt caa ctc cag cag tct ggg gct gag ctg gca aga   96
Ala Tyr Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala Arg
        -1   1   5   10
cct ggg gct tca gtg aag ttg tcc tgc aag gct tct ggc tac acc ttt   144
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15   20   25
act ccc tac tgg atg cag tgg gta aaa cag agg cct gga cag ggt ctg   192
Thr Pro Tyr Trp Met Gln Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
   30   35   40   45
gaa tgg att ggg tct att ttt cct gga gat ggt gat act agg tac agt   240
Glu Trp Ile Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50   55   60
cag aag ttc aag ggc aag gcc aca ttg act gca gat aaa tcc tcc agt   288
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
            65   70   75
aca gcc tac atg caa ctc agc atc ttg gca ttt gag gac tct gcg gtc   336
Thr Ala Tyr Met Gln Leu Ser Ile Leu Ala Phe Glu Asp Ser Ala Val
            80   85   90
tat tac tgt gca aga gga tta cga cga ggg ggg tac tac ttt gac tac   384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95   100   105

```
tgg ggc caa ggc acc act ctc aca gtc tcc tca g                       418
Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
110             115                 120
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<210>   4
<211>   139
<212>   PRT
<213>   Mouse

<223>   Amino acid sequence of H chain V region of mouse
          anti-HM1.24 antibody

<400>   4
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Met Glu Cys Asn Trp Ile Leu Pro Phe Ile Leu Ser Val Thr Ser Gly
                -15             -10                 -5
Ala Tyr Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala Arg
        -1   1                 5                   10
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
    30              35                  40                  45
Glu Trp Ile Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
            65                  70                  75
Thr Ala Tyr Met Gln Leu Ser Ile Leu Ala Phe Glu Asp Ser Ala Val
            80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95              100                 105
Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
110             115                 120
```

<210>   5
<211>   11
<212>   PRT
<213>   Artificial Sequence

<220>   CDR(1) of L chain V region of anti-HM1.24 antibody
<223>

<400>   5

Lys Ala Ser Gln Asp Val Asn Thr Ala Val Ala
 1   5   10

<210>   6
<211>   7
<212>   PRT
<213>   Artificial Sequence

<220>   CDR(2) of L chain V region of anti-HM1.24 antibody
<223>

<400>   6
Ser Ala Ser Asn Arg Tyr Thr
 1   5

<210>   7
<211>   9
<212>   PRT
<213>   Artificial Sequence

<220>   CDR(3) of L chain V region of anti-HM1.24 antibody
<223>

<400>   7
Gln Gln His Tyr Ser Thr Pro Phe Thr
 1   5

<210>   8
<211>   5
<212>   PRT
<213>   Artificial Sequence

<220>   CDR(1) of H chain V region of anti-HM1.24 antibody
<223>

<400>   8
Pro Tyr Trp Met Gln
  1   5

<210>   9
<211>   16
<212>   PRT
<213>   Artificial Sequence

<220>   CDR(2) of H chain V region of anti-HM1.24 antibody
<223>

<400>   9
Ser Ile Phe Gly Asp Gly Asp Thr Arg Tyr Ser Gln Lys Phe Lys Gly
  1   5   10   15

<210>   10
<211>   11
<212>   PRT
<213>   Artificial Sequence

<220>   CDR(3) of H chain V region of anti-HM1.24 antibody
<223>

<400>   10
Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
  1   5   10

<210>   11
<211>   379
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized L chain V region of
          anti-HM1.24 antibody
<223>

<400>   11
atg gga tgg agc tgt atc atc ctc tcc ttg gta gca aca gct aca ggt   48
Met Gly Trp Ser Cys Ile Ile Leu Ser Leu Val Ala Thr Ala Thr Gly
              -15   -10   -5

gtc cac tcc gac atc cag atg acc cag agc cca agc agc ctg agc gcc   96
Val His Ser Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala
              -1 1   5   10

agc gtg ggt gac aga gtg acc atc acc tgt aag gct agt cag gat gtg   144
Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val
           15   20   25

aat act gct gta gcc tgg tac cag cag aag cca gga aag gct cca aag   192
Asn Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
 30   35   —   40   45

ctg ctg atc tac tcg gca tcc aac cgg tac act ggt gtg cca agc aga   240
Leu Leu Ile Tyr Ser Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg
                 50   55   60

ttc agc ggt agc ggt agc ggt acc gac ttc acc ttc acc atc agc agc   288
Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser
              65   70   75

ctc cag cca gag gac atc gct acc tac tac tgc cag caa cat tat agt   336
Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln His Tyr Ser
              80   85   90

act cca ttc acg ttc ggc caa ggg acc aag gtg gaa atc aaa c   379
Thr Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
           95   100   105

<210>   12
<211>   126
<212>   PRT
<213>   Artificial Sequence

<220>   Humanized L chain V region of anti-HM1.24 antibody
<223>

<400>   12

Met Gly Trp Ser Cys Ile Ile Leu Ser Leu Val Ala Thr Ala Thr Gly
                  -15   -10   -5

Val His Ser Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala
          -1   1   5   10

Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val
        15   20   25

Asn Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
30   35   40   45

Leu Leu Ile Tyr Ser Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg
                50   55   60

Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser
            65   70   75

Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln His Tyr Ser
            80   85   90

Thr Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
    95   100   —   105

<210>   13
<211>   379
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized L chain V region of
         anti-HM1.24 antibody
<223>

<400>   13
atg gga tgg agc tgt atc atc ctc tcc ttg gta gca aca gct aca ggt   48
Met Gly Trp Ser Cys Ile Ile Leu Ser Leu Val Ala Thr Ala Thr Gly
                  -15   -10   -5

gtc cac tcc gac atc cag atg acc cag agc cca agc agc ctg agc gcc   96
Val His Ser Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala
          -1   1   5   10

agc gtg ggt gac aga gtg acc atc acc tgt aag gct agt cag gat gtg   144
Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val
        15   20   25

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```
aat act gct gta gcc tgg tac cag cag aag cca gga aag gct cca aag        192
Asn Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
 30                  35                  40                  45
ctg ctg atc tac tcg gca tcc aac cgg tac act ggt gtg cca agc aga        240
Leu Leu Ile Tyr Ser Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg
                 50                  55                  60
ttc agc ggt agc ggt agt ggt acc gac tac acc ttc acc atc agc agc        288
Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Thr Phe Thr Ile Ser Ser
                 65                  70                  75
ctc cag cca gag gac atc gct acc tac tac tgc cag caa cat tat agt        336
Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln His Tyr Ser
                 80                  85                  90
act cca ttc acg ttc ggc caa ggg acc aag gtg gaa atc aaa c             379
Thr Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
                 95                 100                 105


<210>     14
<211>     126
<212>     PRT
<213>     Artificial Sequence

<220>     Humanized L chain V region of anti-HM1.24 antibody
<223>

<400>     14
Met Gly Trp Ser Cys Ile Ile Leu Ser Leu Val Ala Thr Ala Thr Gly
                -15                 -10                 -5
Val His Ser Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala
                -1   1              5                  10
Ser Val Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val
     15                  20                  25
Asn Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
 30                  35                  40                  45
Leu Leu Ile Tyr Ser Ala Ser Asn Arg Tyr Thr Gly Val Pro Ser Arg
                 50                  55                  60
Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Thr Phe Thr Ile Ser Ser
                 65                  70                  75
```

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Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln His Tyr Ser
              80   85   90
Thr Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
        95   100   105

<210>   15
<211>   418
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version a)
         of anti-HM1.24 antibody
<223>

<400>   15
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt   48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15   -10   -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag   96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1   1   5   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc   144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
            15   20   25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt   192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30   35   40   45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt   240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                    50   55   60
cag aag ttc aag ggc aga gtc acc atg acc gca gac acg tcc acg agc   288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
                65   70   75
aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg   336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80   85   90

```
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac        384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95              100             105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                          418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>   16
<211>   139
<212>   PRT
<213>   Artificial Sequence

<220>   Humanized H chain V region(version a) of anti-HM1.24
        antibody
<223>

<400>   16
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15             -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1  1               5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15              20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30             35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
            65                  70                  75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95              100             105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>   17
<211>   418
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<212>   DNA

<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version b)
         of anti-HM1.24 antibody

<223>

<400>   17

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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15               -10               -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
         -1  1               5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
         15                20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt       192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt       240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc acg agc       288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Thr Ser
                65                  70                  75
aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg       336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac       384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95                  100                 105
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Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
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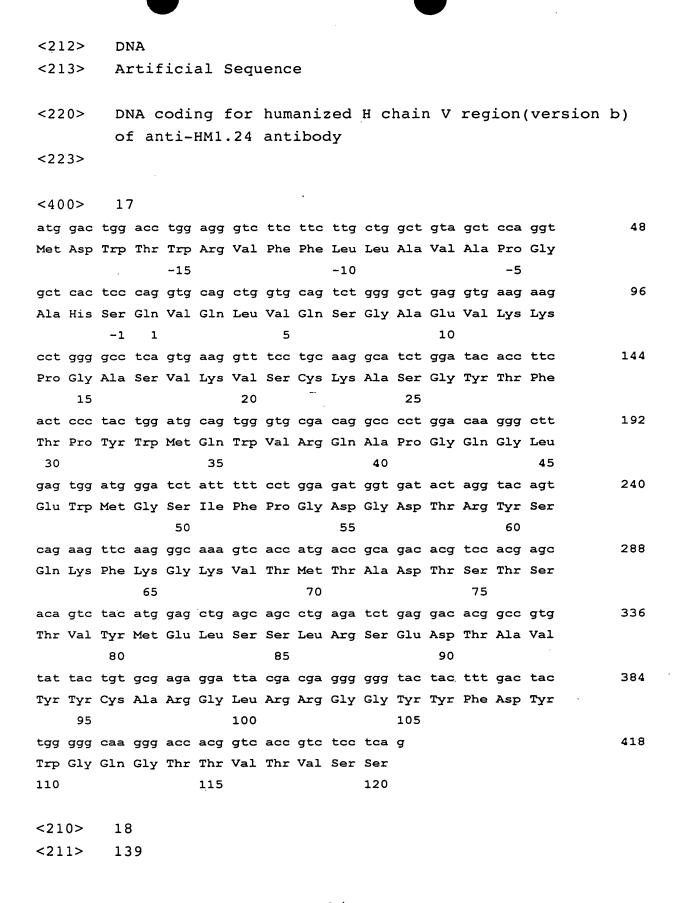
<210>   18
<211>   139

<212>   PRT
<213>   Artificial Sequence

<220>   Humanized H chain V region(version b) of anti-HM1.24
         antibody
<223>

<400>   18
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15   -10   -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
              -1   1   5   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15   20   25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30   35   40   45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                  50   55   60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Thr Ser
              65   70   75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
        80   85   90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95   100   105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110   115   120

<210>   19
<211>   418
<212>   DNA
<213>   Artificial Sequence

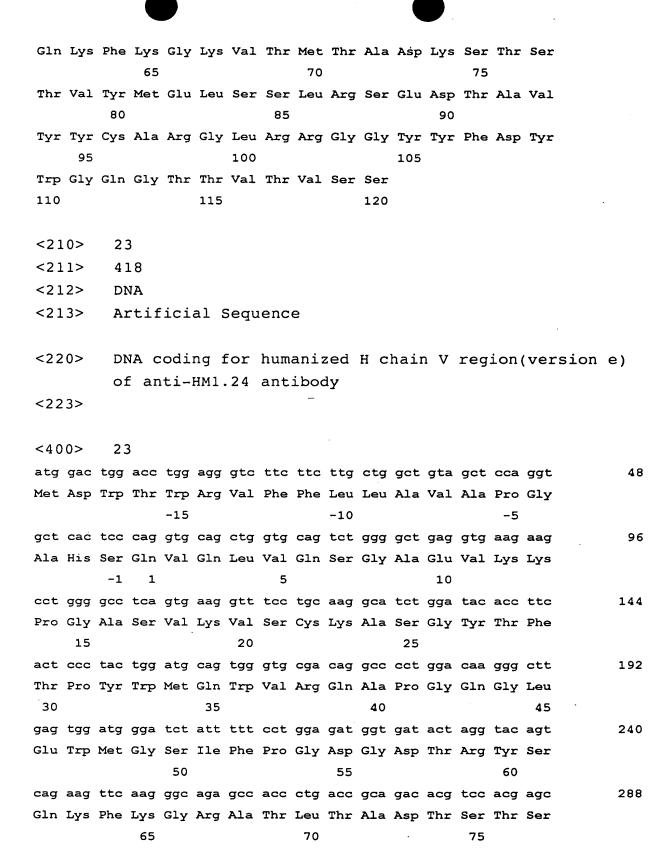<220>   DNA coding for H chain V region(version c) of
         anti-HM1.24 antibody
<223>

<400>   19

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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt          48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15               -10                -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag          96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1  1               5                    10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc         144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt         192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                  35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt         240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
cag aag ttc aag ggc aga gtc act atg acc gca gac aag tcc acg agc         288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Lys Ser Thr Ser
                65                  70                  75
aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg         336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac         384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                           418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210>   20
<211>   139
<212>   PRT
<213>   Artificial Sequence

<220>   H chain V region(version c) of anti-HM1.24 antibody
<223>

<400>   20

```
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15                   -10                   -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1   1               5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                 35                  40                      45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Lys Ser Thr Ser
            65                  70                  75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
        80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
    95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    21
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version d)
         of anti-HM1.24 antibody
<223>

<400>    21
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15                   -10                   -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1   1               5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
```

```
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt          192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                  35                  40                  45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt          240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60

cag aag ttc aag ggc aaa gtc acc atg acc gca gac aag tcc acg agc          288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Lys Ser Thr Ser
                65                  70                  75

aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg          336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac          384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95                 100                 105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                            418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    22
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    H chain V region(version d) of anti-HM1.24 antibody
<223>

<400>    22
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
                -1  1               5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
```

```
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Lys Ser Thr Ser
              65                  70                  75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
          80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
      95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

```
<210>    23
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version e)
         of anti-HM1.24 antibody
<223>    —

<400>    23
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt      48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15                 -10                 -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag      96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1  1               5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc     144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
          15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt     192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
  30                  35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt     240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
              50                  55                  60
cag aag ttc aag ggc aga gcc acc ctg acc gca gac acg tcc acg agc     288
Gln Lys Phe Lys Gly Arg Ala Thr Leu Thr Ala Asp Thr Ser Thr Ser
              65                  70                  75
```

```
aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg        336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac        384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                          418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    24
<211>    239
<212>    PRT
<213>    Artificial Sequence


<220>    H chain V region(version e) of anti-HM1.24 antibody
<223>


<400>    24
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1   1                5                  10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Arg Ala Thr Leu Thr Ala Asp Thr Ser Thr Ser
            65                  70                  75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210> 25
<211> 418
<212> DNA
<213> Artificial Sequence

<220> DNA coding for humanized H chain V region(version f)
      of anti-HM1.24 antibody
<223>

<400> 25
```
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15               -10               -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1   1               5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt       192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
  30                  35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt       240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                  50                  55                  60
cag aag ttc aag ggc aga gcc acc ctg act gca gac acg tcc tcg agc       288
Gln Lys Phe Lys Gly Arg Ala Thr Leu Thr Ala Asp Thr Ser Ser Ser
              65                  70                  75
aca gcc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg       336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac       384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
      95                  100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                         418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210> 26
<211> 139
<212> PRT
<213> Artificial Sequence

<220> Humanized H chain V region(version f) of anti-HM1.24
antibody
<223>

<400> 26
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15   -10   -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1   1   5   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15   20   25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30   35   40   45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50   55   60
Gln Lys Phe Lys Gly Arg Ala Thr Leu Thr Ala Asp Thr Ser Ser Ser
            65   70   75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
        80   85   90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95   100   105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110   115   120

<210> 27
<211> 418
<212> DNA
<213> Artificial Sequence

<220> DNA coding for humanized H chain V region(version g)
of anti-HM1.24 antibody
<223>

<400>   27

```
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt       48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15                 -10                 -5

gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag       96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1   1                 5                   10

cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc      144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
          15                  20                  25

act ccc tac tgg atg cag tgg gtg cga cag cgc cct gga caa ggg ctt      192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Arg Pro Gly Gln Gly Leu
 30                  35                  40                  45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt      240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
              50                 - 55                 60

cag aag ttc aag ggc aga gtc acc atg acc gca gac acg tcc acg agc      288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
              65                  70                  75

aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg      336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
              80                  85                  90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac      384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
          95                  100                 105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                        418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210>   28
<211>   139
<212>   PRT
<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version g)
         of anti-HM1.24 antibody
<223>

<400>   28

```
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15              -10               -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1    1               5               10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15              20              25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Arg Pro Gly Gln Gly Leu
 30              35              40              45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
            50              55              60
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
            65              70              75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80              85              90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95              100             105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120
```

<210>   29
<211>   418
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version h)
          of anti-HM1.24 antibody
<223>

<400>   29

```
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt   48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15              -10               -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag   96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1    1               5               10
```

```
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc        144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt        192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30                  35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt        240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc        288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65                  70                  75
aca gcc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg        336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac        384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                          418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210>   30
<211>   239
<212>   PRT
<213>   Artificer Sequence

<220>   Humanized H chain V region(version h) of anti-HM1.24
           antibody
<223>

<400>   30
```
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1   1                  5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15                  20                  25
```

```
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40              45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50              55              60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65              70              75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
        80              85              90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
    95              100             105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>    31
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version i)
         of anti-HM1.24 antibody
<223>

<400>    31
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15             -10             -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1  1           5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15              20              25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt       192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40              45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt       240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50              55              60
```

```
cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc          288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                65                  70                  75
aca gcc tac atg gag ctg agc agc ctg gca ttt gag gac acg gcc gtg          336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Ala Phe Glu Asp Thr Ala Val
                80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac          384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
                95                  100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                           418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210>   32
<211>   139
<212>   PRT
<213>   Artificial Sequence

<220>   Humanized H chain V region(version i) of anti-HM1.24
         antibody
<223>

<400>   32
```
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1   1                5                  10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                65                  70                  75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Ala Phe Glu Asp Thr Ala Val
                80                  85                  90
```

```
        Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
             95                  100                 105
        Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        110                 115                 120


<210>    33
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version j)
         of anti-HM1.24 antibody
<223>


<400>    33
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt          48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
             -15                 -10                 -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag          96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
             -1   1              5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc         144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
             15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt         192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                  35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt         240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                     50                  55                  60
cag aag ttc aag ggc aaa gcc acc ctg act gca gac acg tcc tcg agc         288
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Thr Ser Ser Ser
                 65                  70                  75
aca gcc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg         336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
             80                  85                  90
```

```
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac          384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95                  100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                            418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                  115                 120


<210>    34
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    Humanized H chain V region(version j) of anti-HM1.24
         antibody
<223>

<400>    34
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15              -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
         -1   1            5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
     15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                  50                  55                  60
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Thr Ser Ser Ser
              65                  70                  75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
          80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
     95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                  115                 120


<210>    35
<211>    418
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<212> DNA

<213> Artificial Sequence

<220> DNA coding for H chain V region(version k) of
anti-HM1.24 antibody

<223>

<400> 35

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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt       48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15            -10              -5

gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag       96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
         -1  1              5                    10

cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc      144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15              20               25

act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt      192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35               40                   45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt      240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50               55               60

cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc      288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65               70               75

aca gcc tac atg cag ctg agc agc cta aga tct gag gac acg gcc gtg      336
Thr Ala Tyr Met Gln Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80               85               90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac      384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95              100              105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                        418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110              115              120
```

<210> 36

<211> 139

<212>   PRT
<213>   Artificial Seam

<220>   Humanized H chain V region(version k) of anti-HM1.24
         antibody
<223>

<400>   36
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15   -10   -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1   1   5   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15   20   25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
  30   35   40   45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                  50   55   60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
          65   70   75
Thr Ala Tyr Met Gln Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
          80   85   90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95   100   105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
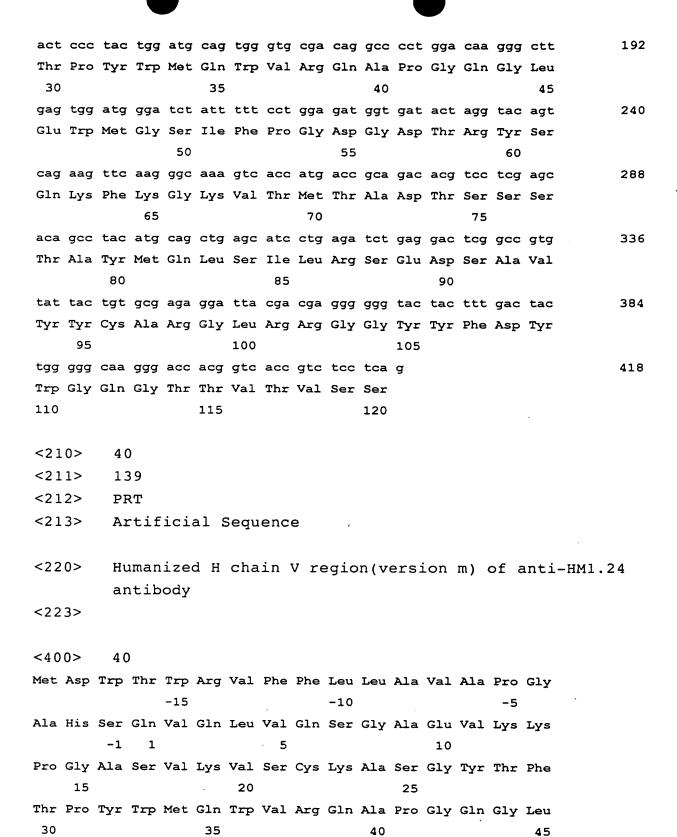110   115   120

<210>   37
<211>   418
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version 1)
         of anti-HM1.24 antibody
<223>

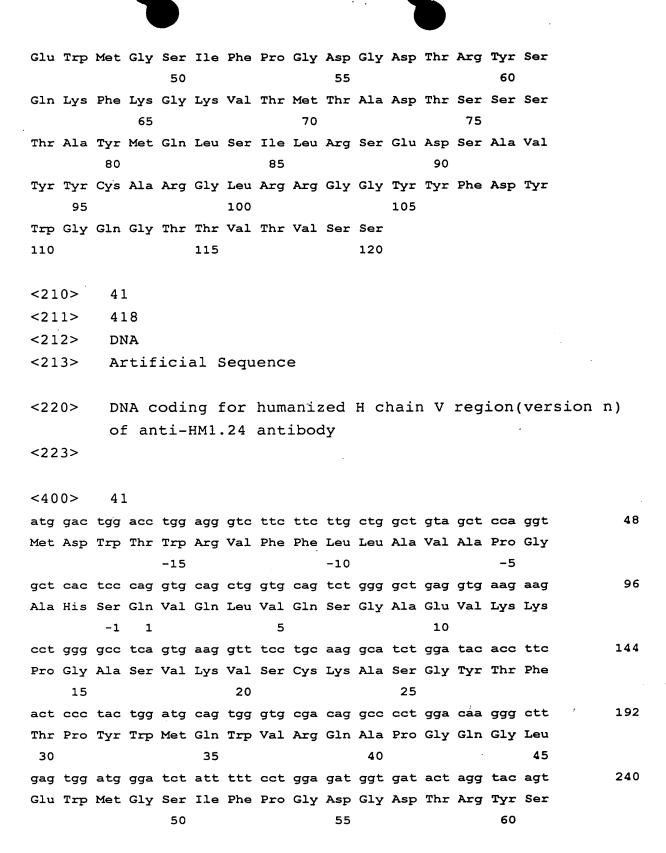<400>   37

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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt    48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15               -10                -5

gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag    96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1   1               5                    10

cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc   144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                    20                   25

act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt   192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30                    35                   40                45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt   240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                    55                   60

cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc   288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65                    70                   75

aca gcc tac atg cag ctg agc atc ctg aga tct gag gac acg gcc gtg   336
Thr Ala Tyr Met Gln Leu Ser Ile Leu Arg Ser Glu Asp Thr Ala Val
            80                    85                   90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac   384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                    100                  105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                     418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                   115                  120


<210>    38
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    Humanized H chain V region(version 1) of anti-HM1.24
         antibody
<223>

<400>    38
```

```
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15               -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1    1             5                 10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15               20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30                  35               40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55               60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65                  70                  75
Thr Ala Tyr Met Gln Leu Ser Ile Leu Arg Ser Glu Asp Thr Ala Val
        80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210> 39
<211> 418
<212> DNA
<213> Artificial Sequence

<220> DNA coding for humanized H chain V region(version m)
      of anti-HM1.24 antibody
<223>

<400> 39
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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt      48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15               -10                 -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag      96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1    1             5                 10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc     144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15               20                  25
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```
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt          192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40              45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt          240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
            50              55              60

cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc          288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65              70              75

aca gcc tac atg cag ctg agc atc ctg aga tct gag gac tcg gcc gtg          336
Thr Ala Tyr Met Gln Leu Ser Ile Leu Arg Ser Glu Asp Ser Ala Val
            80              85              90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac          384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
            95              100             105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                           418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>    40
<211>    139
<212>    PRT
<213>    Artificial Sequence


<220>    Humanized H chain V region(version m) of anti-HM1.24
         antibody

<223>


<400>    40
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15             -10             -5

Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1  1           5               10

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15              20              25

Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40              45
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Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                      55                  60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                65                      70                  75
Thr Ala Tyr Met Gln Leu Ser Ile Leu Arg Ser Glu Asp Ser Ala Val
            80                      85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                      100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                     115                 120


<210>    41
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version n)
         of anti-HM1.24 antibody
<223>

<400>    41
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15                 -10                 -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1    1               5                   10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc        144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt        192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                 35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt        240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                      55                  60
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cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc          288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                65                  70                  75
aca gcc tac atg gag ctg agc atc ctg aga tct gag gac acg gcc gtg          336
Thr Ala Tyr Met Glu Leu Ser Ile Leu Arg Ser Glu Asp Thr Ala Val
                80                  85                  90
tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac          384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                 100                 105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                           418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

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<210>    42
<211>    139
<212>    PRT
<213>    Artificial Sequence -

<220>    Humanized H chain V region(version n) of anti-HM1.24
         antibody
<223>

<400>    42
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1    1             5                  10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                65                  70                  75
Thr Ala Tyr Met Glu Leu Ser Ile Leu Arg Ser Glu Asp Thr Ala Val
        80                  85                  90
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Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    43
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version o)
         of anti-HM1.24 antibody
<223>


<400>    43
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt         48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15                 -10                 -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag         96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
                -1   1                  5                  10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc        144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt        192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
30                  35                  40                  45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt        240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
cag aag ttc aag ggc aaa gtc acc atg acc gca gac acg tcc tcg agc        288
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                65                  70                  75
aca gcc tac atg gag ctg agc agc ctg aga tct gag gac tcg gcc gta        336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Ser Ala Val
        80                  85                  90
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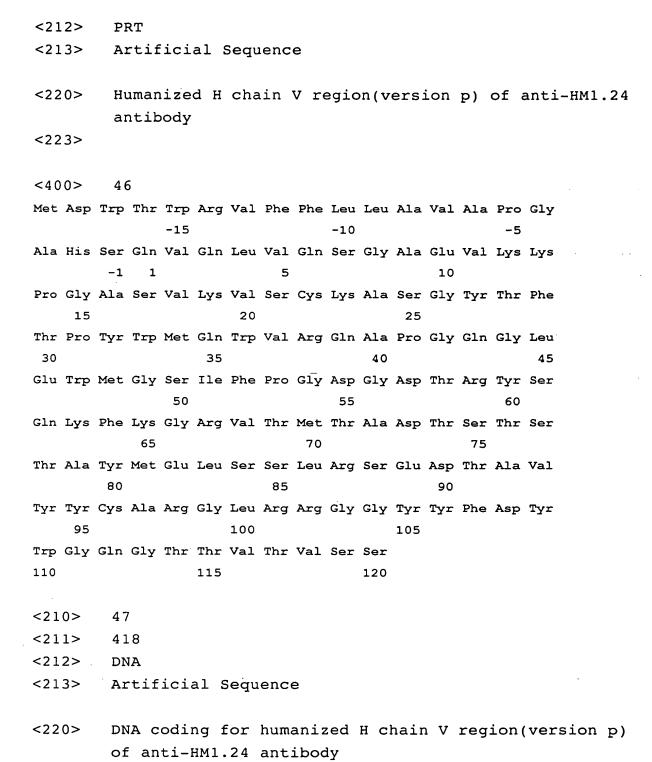
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tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac       384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95              100             105
tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                         418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>    44
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    Humanized H chain V region(version o) of anti-HM1.24
         antibody
<223>


<400>    44
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1   1               5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30             35                  40                      45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Lys Val Thr Met Thr Ala Asp Thr Ser Ser Ser
            65                  70                  75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Ser Ala Val
        80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
    95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>    45
<211>    418
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<212>   DNA

<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version p)
         of anti-HM1.24 antibody

<223>

<400>   45

atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt   48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15   -10   -5

gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag   96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
              -1   1   5   10

cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc   144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
         15   20   25

act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt   192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30   35   40   45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt   240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
              50   55   60

cag aag ttc aag ggc aga gtc acc atg acc gca gac acg tcc acg agc   288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
              65   70   75

aca gcc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg   336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
         80   85   90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac   384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95   100   105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g   418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110   115   120

<210>   46
<211>   139

<212>   PRT
<213>   Artificial Sequence

<220>   Humanized H chain V region(version p) of anti-HM1.24
         antibody
<223>

<400>   46
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15   -10   -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1   1   5   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15   20   25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
   30   35   40   45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                  50   55   60
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
              65   70   75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
          80   85   90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95   100   105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110   115   120

<210>   47
<211>   418
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version p)
         of anti-HM1.24 antibody
<223>

<400>   47

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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15              -10               -5

gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
         -1   1               5                   10

cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
         15                  20                  25

act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt       192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
  30                  35                  40                  45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt       240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                  50                  55                  60

cag aag ttc aag ggc aga gtc acc atg acc gca gac acg tcc tcg agc       288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Ser Ser
                  65                  70                  75

aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg       336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
              80                  85                  90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac       384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95                  100                 105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                         418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    48
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    Humanized H chain V region(version p) of anti-HM1.24
         antibody
<223>

<400>    48
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Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15                -10                -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1   1              5                  10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
     15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
              50                  55                  60
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Ser Ser
          65                  70                  75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
          80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
     95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    49
<211>    418
<212>    DNA
<213>    Artificial Sequence

<220>    DNA coding for humanized H chain V region(version r)
         of anti-HM1.24 antibody
<223>

<400>    49
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15                -10                -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
          -1   1              5                  10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
     15                  20                  25
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act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt        192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40              45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt        240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50              55              60

cag aag ttc aag ggc aga gtc acc atg acc gca gac aag tcc acg agc        288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Lys Ser Thr Ser
            65              70              75

aca gcc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg        336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80              85              90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac        384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
            95              100             105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                          418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110             115             120


<210>   50
<211>   139
<212>   PRT
<213>   Artificial Sequence

<220>   Humanized H chain V region(version r) of anti-HM1.24
        antibody
<223>

<400>   50
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15             -10             -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1   1          5               10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15              20              25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40              45
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Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
              50   55   60

Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Lys Ser Thr Ser
              65   70   75

Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
              80   85   90

Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
         95   100   105

Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110   115   120

<210>   51
<211>   40
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   51
actagtcgac atgaagttgc ctgttaggct gttggtgctg   40

<210>   52
<211>   39
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   52
actagtcgac atggagwcag acacactcct gytatgggt   39

<210>   53
<211>   40
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   53
actagtcgac atgagtgtgc tcactcaggt cctggsgttg   40

<210>   54
<211>   43
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   54
actagtcgac atgaggrccc ctgctcagwt tyttggmwtc ttg   43

<210>   55
<211>   40
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   55
actagtcgac atggatttwc aggtgcagat twtcagcttc   40

<210>   56
<211>   37
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   56
actagtcgac atgaggtkcy ytgytsagyt yctgrgg   37

<210>   57
<211>   41
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   57
actagtcgac atgggcwtca agatggagtc acakwyycwg g   41

<210>   58
<211>   41
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   58
actagtcgac atgtggggay ctktttycmm tttttcaatt g   41

<210>   59
<211>   35
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   59
actagtcgac atggtrtccw casctcagtt ccttg   35

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<210>    60
<211>    37
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    60
actagtcgac atgtatatat gtttgttgtc tatttct                        37


<210>    61
<211>    38
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    61
actagtcgac atggaagccc cagctcagct tctcttcc                       38


<210>    62
<211>    27
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    62
ggatcccggg tggatggtgg gaagatg                                   27


<210>    63
<211>    25
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<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 63
tagagtcacc gaggagccag ttgta   25

<210> 64
<211> 26
<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 64
ggatcccggg agtggataga ccgatg   26

<210> 65
<211> 34
<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 65
gataagcttc caccatgggc ttcaagatgg agtc   34

<210> 66
<211> 34
<212> DNA
<213> Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   66
gataagcttc caccatggaa tgtaactgga tact   34

<210>   67
<211>   34
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   67
ggcggatcca ctcacgtttt atttccaact ttgt   34

<210>   68
<211>   34
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   68
ggcggatcca ctcacctgag gagactgtga gagt   34

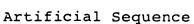<210>   69
<211>   18
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400> 69

cagacagtgg ttcaaagt   18

<210>   70
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   70

gaattcggat ccactcacgt ttgatt   26

<210>   71
<211>   48
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   71

agtcaggatg tgaatactgc tgtagcctgg taccagcaga agccagga   48

<210>   72
<211>   39
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   72

gcatccaacc ggtacactgg tgtgccaagc agattcagc   39

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<210>    73
<211>    45
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    73
caacattata gtactccatt cacgttcggc caagggacca aggtg                    45


<210>    74
<211>    47
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    74
gcagtattca catcctgact ggccttacag gtgatggtca ctctgtc                  47


<210>    75
<211>    38
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    75
acaccagtgt accggttgga tgccgagtag atcagcag                            38


<210>    76
<211>    41
<212>    DNA
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<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   76
gtgaatggag tactataatg ttgctggcag tagtaggtag c   41

<210>   77
<211>   31
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   77
ggtaccgact acaccttcac catcagcagc c   31

<210>   78
<211>   31
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

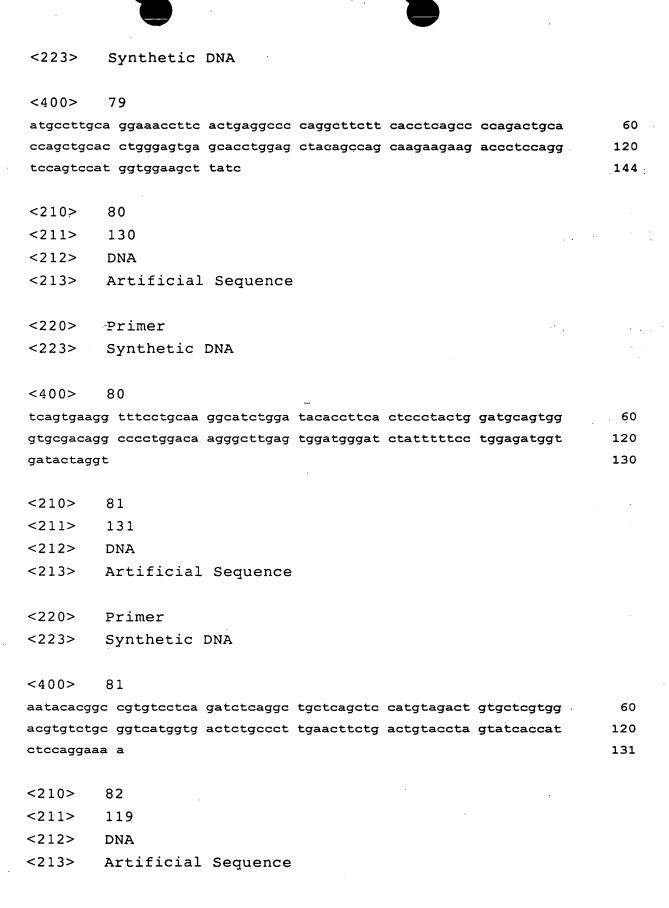<400>   78
ggtgaaggtg tagtcggtac cgctaccgct a   31

<210>   79
<211>   144
<212>   DNA
<213>   Artificial Sequence

<220>   Primer

<223>   Synthetic DNA

<400>   79

atgccttgca ggaaaccttc actgaggccc caggcttctt cacctcagcc ccagactgca   60

ccagctgcac ctgggagtga gcacctggag ctacagccag caagaagaag accctccagg   120

tccagtccat ggtggaagct tatc   144

<210>   80
<211>   130
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   80

tcagtgaagg tttcctgcaa ggcatctgga tacaccttca ctccctactg gatgcagtgg   60

gtgcgacagg cccctggaca agggcttgag tggatgggat ctattttttcc tggagatggt   120

gatactaggt   130

<210>   81
<211>   131
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   81

aatacacggc cgtgtcctca gatctcaggc tgctcagctc catgtagact gtgctcgtgg   60

acgtgtctgc ggtcatggtg actctgccct tgaacttctg actgtaccta gtatcaccat   120

ctccaggaaa a   131

<210>   82
<211>   119
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   82
gagatctgag gacacggccg tgtattactg tgcgagagga ttacgacgag gggggtacta   60
ctttgactac tgggggcaag ggaccacggt caccgtctcc tcaggtgagt ggatccgac   119

<210>   83
<211>   25
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   83
gataagcttc caccatggac tggac   25

<210>   84
<211>   25
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   84
gtcggatcca ctcacctgag gagac   25

<210>   85
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer

<223>   Synthetic DNA

<400>   85
aagttcaagg gcaaagtcac catgac   26

<210>   86
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   86
gtcatggtga ctttgccctt gaactt   26

<210>   87
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   87
atgaccgcag acaagtccac gagcac   26

<210>   88
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   88

gtgctcgtgg acttgtctgc ggtcat   26

<210>   89
<211>   47
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   89
aagttcaagg gcaaagtcac catgaccgca gacaagtcca cgagcac   47

<210>   90
<211>   47
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   90
gtgctcgtgg acttgtctgc ggtcatggtg actttgccct tgaactt   47

<210>   91
<211>   38
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   91
aagttcaagg gcagagccac cctgaccgca gacacgtc   38

<210>   92

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<211>     38
<212>     DNA
<213>     Artificial Sequence

<220>     Primer
<223>     Synthetic DNA

<400>     92
gacgtgtctg cggtcagggt ggctctgccc ttgaactt                          38


<210>     93
<211>     18
<212>     DNA
<213>     Artificial Sequence

<220>     Primer
<223>     Synthetic DNA

<400>     93
cagacagtgg ttcaaagt                                               18


<210>     94
<211>     17
<212>     DNA
<213>     Artificial Sequence

<220>     Primer
<223>     Synthetic DNA

<400>     94
gccccaaagc caaggtc                                                17


<210>     95
<211>     23
<212>     DNA
<213>     Artificial Sequence
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<220> Primer
<223> Synthetic DNA

<400> 95
attttтcctg gagatggtga tac   23

<210> 96
<211> 23
<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 96
gtatcaccat ctccaggaaa tat   23

<210> 97
<211> 418
<212> DNA
<213> Artificial Sequence

<220> DNA coding for humanized H chain V region(native/ver
      sion a mix) of anti-HM1.24 antibody
<223>

<400> 97
atg gaa tgt aac tgg ata ctt cct ttt att ctg tca gta act tca ggt   48
Met Glu Cys Asn Trp Ile Leu Pro Phe Ile Leu Ser Val Thr Ser Gly
            -15   -10   -5
gcc tac tca cag gtt caa ctc cag cag tct ggg gct gag ctg gca aga   96
Ala Tyr Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala Arg
            -1 1   5   10

```
cct ggg gct tca gtg aag ttg tcc tgc aag gct tct ggc tac acc ttt        144
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25

act ccc tac tgg atg cag tgg gta aaa cag agg cct gga cag ggt ctg        192
Thr Pro Tyr Trp Met Gln Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
    30                  35                  40                  45

gaa tgg att ggg tct att ttt cct gga gat ggt gat act agg tac agt        240
Glu Trp Ile Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60

cag aag ttc aag ggc aga gtc acc atg acc gca gac acg tcc acg agc        288
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
                65                  70                  75

aca gtc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg        336
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
                80                  85                  90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac        384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
        95                  100                 105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                          418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120


<210>    98
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    Humanized H chain V region(native/version a mix) of
         anti-HM1.24 antibody
<223>

<400>    98
Met Glu Cys Asn Trp Ile Leu Pro Phe Ile Leu Ser Val Thr Ser Gly
                -15                 -10                 -5
Ala Tyr Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Ala Arg
        -1  1                5                   10
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
    15                  20                  25
```

```
Thr Pro Tyr Trp Met Gln Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
 30              35              40                      45
Glu Trp Ile Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                 50              55                  60
Gln Lys Phe Lys Gly Arg Val Thr Met Thr Ala Asp Thr Ser Thr Ser
             65              70                  75
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
             80              85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
     95              100                     105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110              115             120
```

<210>   99
<211>   418
<212>   DNA
<213>   Artificial Sequence –

<220>   DNA coding for humanized C chain V region(native/ver
          sion a mix) of anti-HM1.24 antibody
<223>

<400>   99

```
atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt       48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
                -15             -10                     -5
gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag       96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
         -1  1             5                       10
cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc      144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
         15              20              25
act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt      192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
 30              35              40                      45
gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt      240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                 50              55                  60
```

```
cag aag ttc aag ggc aag gcc aca ttg act gca gat aaa tcc tcc agt        288
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
            65                  70                  75
aca gcc tac atg caa ctc agc atc ttg gca ttt gag gac tct gcg gtc        336
Thr Ala Tyr Met Gln Leu Ser Ile Leu Ala Phe Glu Asp Ser Ala Val
            80                  85                  90
tat tac tgt gca aga gga tta cga cga ggg ggg tac tac ttt gac tac        384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
            95                  100                 105
tgg ggc caa ggc acc act ctc aca gtc tcc tca g                          418
Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
110                 115                 120


<210>    100
<211>    139
<212>    PRT
<213>    Artificial Sequence

<220>    Humanized C chain V region(native/version a mix) of
         anti-HM1.24 antibody
<223>

<400>    100
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15                 -10                 -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            -1  1               5                   10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15              20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
30                  35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
            65                  70                  75
Thr Ala Tyr Met Gln Leu Ser Ile Leu Ala Phe Glu Asp Ser Ala Val
            80                  85                  90
```

```
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
     95                  100                 105

Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
110                  115                 120


<210>    101
<211>    38
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    101
ctggttcggc ccacctctga aggttccaga atcgatag                              38


<210>    102
<211>    35
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    102
gcagacacgt cctcgagcac agcctacatg gagct                                35


<210>    103
<211>    35
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    103
agctccatgt aggctgtgct cgaggacgtg tctgc                                35
```

```
<210>      104
<211>      26
<212>      DNA
<213>      Artificial Sequence

<220>      Primer
<223>      Synthetic DNA

<400>      104
tgggtgcgac agcgccctgg acaagg                                           26


<210>      105
<211>      26
<212>      DNA
<213>      Artificial Sequence

<220>      Primer
<223>      Synthetic DNA

<400>      105
ccttgtccag ggcgctgtcg caccca                                          26

<210>      106
<211>      41
<212>      DNA
<213>      Artificial Sequence

<220>      Primer
<223>      Synthetic DNA

<400>      106
tacatggagc tgagcagcct ggcatttgag gacacggccg t                         41


<210>      107
<211>      41
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<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    107
acggccgtgt cctcaaatgc caggctgctc agctccatgt a                    41


<210>    108
<211>    26
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    108
aagttcaagg gcaaagccac cctgac                                     26


<210>    109
<211>    26
<212>    DNA
<213>    Artificial Sequence

<220>    Primer
<223>    Synthetic DNA

<400>    109
gtcagggtgg ctttgccctt gaactt                                     26


<210>    110
<211>    23
<212>    DNA
<213>    Artificial Sequence
```

```
<220>      Primer
<223>      Synthetic DNA


<400>      110
gcctacatgc agctgagcag cct                                          23


<210>      111
<211>      23
<212>      DNA
<213>      Artificial Sequence


<220>      Primer
<223>      Synthetic DNA


<400>      111
aggctgctca gctgcatgta ggc                                          23


<210>      112
<211>      38
<212>      DNA
<213>      Artificial Sequence


<220>      Primer
<223>      Synthetic DNA


<400>      112
gcctacatgc agctgagcat cctgagatct gaggacac                          38


<210>      113
<211>      35
<212>      DNA
<213>      Artificial Sequence


<220>      Primer
<223>      Synthetic DNA
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<400> 113

gatctcagga tgctcagctg catgtaggct gtgct   35

<210> 114
<211> 50
<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 114

gcctacatgc agctgagcat cctgagatct gaggactcgg ccgtgtatta   50

<210> 115
<211> 50
<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 115

acggccgagt cctcagatct caggatgctc agctgcatgt aggctgtgct   50

<210> 116
<211> 20
<212> DNA
<213> Artificial Sequence

<220> Primer
<223> Synthetic DNA

<400> 116

gagctgagca tcctgagatc   20

```
<210>      117
<211>      26
<212>      DNA
<213>      Artificial Sequence

<220>      Primer
<223>      Synthetic DNA

<400>      117
gatctcagga tgctcagctc catgta                                              26


<210>      118
<211>      20
<212>      DNA
<213>      Artificial Sequence

<220>      Primer
<223>      Synthetic DNA

<400>      118
agatctgagg actcggccgt                                                     20


<210>      119
<211>      20
<212>      DNA
<213>      Artificial Sequence

<220>      Primer
<223>      Synthetic DNA

<400>      119
acggccgagt cctcagatct                                                     20


<210>      120
<211>      35
<212>      DNA
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<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   120
gcagacacgt ccacgagcac agcctacatg gagct   35

<210>   121
<211>   35
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   121
agctccatgt aggctgtgct cgtggacgtg tctgc   35

<210>   122
<211>   35
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   122
gcagacacgt cctcgagcac agtctacatg gagct   35

<210>   123
<211>   35
<212>   DNA
<213>   Artificial Sequence

<220>   Primer

<400>   123
agctccatgt agactgtgct cgaggacgtg tctgc   35

<210>   124
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   124
agagtcacca tcaccgcaga caagtc   26

<210>   125
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>   Primer
<223>   Synthetic DNA

<400>   125
gacttgtctg cggtgatggt gactct   26

<210>   126
<211>   418
<212>   DNA
<213>   Artificial Sequence

<220>   DNA coding for humanized H chain V region(version s)
          of HM1.24 antibody
<223>

<400> 126

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atg gac tgg acc tgg agg gtc ttc ttc ttg ctg gct gta gct cca ggt        48
Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
              -15                 -10                 -5

gct cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag        96
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
         -1   1                  5                  10

cct ggg gcc tca gtg aag gtt tcc tgc aag gca tct gga tac acc ttc       144
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
         15                 20                 25

act ccc tac tgg atg cag tgg gtg cga cag gcc cct gga caa ggg ctt       192
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30                 35                 40                 45

gag tgg atg gga tct att ttt cct gga gat ggt gat act agg tac agt       240
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
              50                 55                 60

cag aag ttc aag ggc aga gtc acc atc acc gca gac aag tcc acg agc       288
Gln Lys Phe Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser
              65                 70                 75

aca gcc tac atg gag ctg agc agc ctg aga tct gag gac acg gcc gtg       336
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
         80                 85                 90

tat tac tgt gcg aga gga tta cga cga ggg ggg tac tac ttt gac tac       384
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
    95                 100                105

tgg ggg caa ggg acc acg gtc acc gtc tcc tca g                         418
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210>   127
<211>   139
<212>   PRT
<213>   Artificial Sequence

<220>   Humanized H chain V region(version s) of anti-HM1.24
         antibody
<223>

<400> 127

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Met Asp Trp Thr Trp Arg Val Phe Phe Leu Leu Ala Val Ala Pro Gly
            -15                 -10                     -5
Ala His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
        -1  1                 5                       10
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        15                  20                  25
Thr Pro Tyr Trp Met Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    30              35                  40                  45
Glu Trp Met Gly Ser Ile Phe Pro Gly Asp Gly Asp Thr Arg Tyr Ser
                50                  55                  60
Gln Lys Phe Lys Gly Arg Val Thr Ile Thr Ala Asp Lys Ser Thr Ser
                65                  70                  75
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            80                  85                  90
Tyr Tyr Cys Ala Arg Gly Leu Arg Arg Gly Gly Tyr Tyr Phe Asp Tyr
    95                  100                 105
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
110                 115                 120
```

<210>   128
<211>   1013
<212>   DNA
<213>   Human

<220>   DNA coding for HM1.24 antigenic protein
<223>

<400>   128

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gaattcggca cgagggatct gg atg gca tct act tcg tat gac tat tgc        49
                         Met Ala Ser Thr Ser Tyr Asp Tyr Cys
                          1                   5
aga gtg ccc atg gaa gac ggg gat aag cgc tgt aag ctt ctg ctg ggg    97
Arg Val Pro Met Glu Asp Gly Asp Lys Arg Cys Lys Leu Leu Leu Gly
 10              15                  20                  25
ata gga att ctg gtg ctc ctg atc atc gtg att ctg ggg gtg ccc ttg    145
Ile Gly Ile Leu Val Leu Leu Ile Ile Val Ile Leu Gly Val Pro Leu
                30                  35                  40
```

```
att atc ttc acc atc aag gcc aac agc gag gcc tgc cgg gac ggc ctt       193
Ile Ile Phe Thr Ile Lys Ala Asn Ser Glu Ala Cys Arg Asp Gly Leu
            45                  50                  55

cgg gca gtg atg gag tgt cgc aat gtc acc cat ctc ctg caa caa gag       241
Arg Ala Val Met Glu Cys Arg Asn Val Thr His Leu Leu Gln Gln Glu
        60                  65                  70

ctg acc gag gcc cag aag ggc ttt cag gat gtg gag gcc cag gcc gcc       289
Leu Thr Glu Ala Gln Lys Gly Phe Gln Asp Val Glu Ala Gln Ala Ala
    75                  80                  85

acc tgc aac cac act gtg atg gcc cta atg gct tcc ctg gat gca gag       337
Thr Cys Asn His Thr Val Met Ala Leu Met Ala Ser Leu Asp Ala Glu
 90                  95                  100                 105

aag gcc caa gga caa aag aaa gtg gag gag ctt gag gga gag atc act       385
Lys Ala Gln Gly Gln Lys Lys Val Glu Glu Leu Glu Gly Glu Ile Thr
                110                 115                 120

aca tta aac cat aag ctt cag gac gcg tct gca gag gtg gag cga ctg       433
Thr Leu Asn His Lys Leu Gln Asp Ala Ser Ala Glu Val Glu Arg Leu
            125                 130                 135

aga aga gaa aac cag gtc tta agc gtg aga atc gcg gac aag aag tac       481
Arg Arg Glu Asn Gln Val Leu Ser Val Arg Ile Ala Asp Lys Lys Tyr
        140                 145                 150

tac ccc agc tcc cag gac tcc agc tcc gct gcg gcg ccc cag ctg ctg       529
Tyr Pro Ser Ser Gln Asp Ser Ser Ser Ala Ala Ala Pro Gln Leu Leu
    155                 160                 165

att gtg ctg ctg ggc ctc agc gct ctg ctg cag tga gatcccagga           575
Ile Val Leu Leu Gly Leu Ser Ala Leu Leu Gln ***
170                 175                 180

agctggcaca tcttggaagg tccgtcctgc tcggcttttc gcttgaacat tcccttgatc    635

tcatcagttc tgagcgggtc atggggcaac acggttagcg gggagagcac ggggtagccg    695

gagaagggcc tctggagcag gtctggaggg gccatggggc agtcctgggt ctggggacac    755

agtcgggttg acccagggct gtctccctcc agagcctccc tccggacaat gagtcccccc    815

tcttgtctcc caccctgaga ttgggcatgg ggtgcggtgt gggggggcatg tgctgcctgt    875

tgttatgggt ttttttgcg gggggggttg ctttttttctg ggtctttga gctccaaaaa    935

aataaacact tcctttgagg gagagcacac cttaaaaaaa aaaaaaaaaa aaaaaaaaaa    995

aaaattcggg cggccgcc                                                  1013


<210>    129
<211>    180
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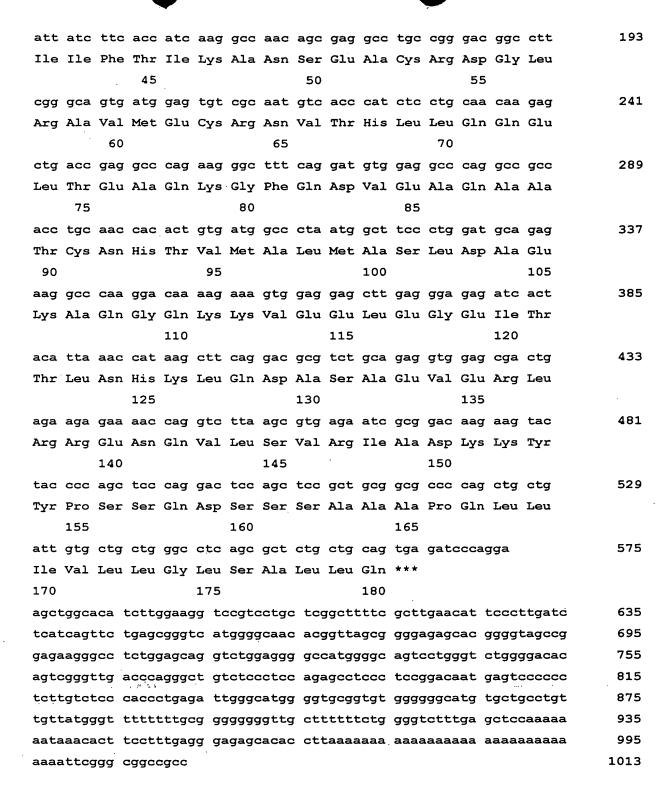
<212>   PRT
<213>   Human

<220>   HM1.24 antigenic protein
<223>

<400>   129
Met Ala Ser Thr Ser Tyr Asp Tyr Cys Arg Val Pro Met Glu Asp Gly
 1   5   10   15
Asp Lys Arg Cys Lys Leu Leu Leu Gly Ile Gly Ile Leu Val Leu Leu
             20   25   30
Ile Ile Val Ile Leu Gly Val Pro Leu Ile Ile Phe Thr Ile Lys Ala
         35   40   45
Asn Ser Glu Ala Cys Arg Asp Gly Leu Arg Ala Val Met Glu Cys Arg
     50   55   60
Asn Val Thr His Leu Leu Gln Gln Glu Leu Thr Glu Ala Gln Lys Gly
 65   70   75   80
Phe Gln Asp Val Glu Ala Gln Ala Ala Thr Cys Asn His Thr Val Met
             85   90   95
Ala Leu Met Ala Ser Leu Asp Ala Glu Lys Ala Gln Gly Gln Lys Lys
             100   105   110
Val Glu Glu Leu Glu Gly Glu Ile Thr Thr Leu Asn His Lys Leu Gln
             115   120   125
Asp Ala Ser Ala Glu Val Glu Arg Leu Arg Arg Glu Asn Gln Val Leu
     130   135   140
Ser Val Arg Ile Ala Asp Lys Lys Tyr Tyr Pro Ser Ser Gln Asp Ser
145   150   155   160
Ser Ser Ala Ala Ala Pro Gln Leu Leu Ile Val Leu Leu Gly Leu Ser
             165   170   175
Ala Leu Leu Gln
         180